This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-7 (canceled)

8 (previously presented): A method for identifying a compound that modulates cellular proliferation or chemosensitivity, the method comprising the steps of contacting the compound with a meiotic recombination 11 (MRE11) polypeptide wherein the polypeptide has at least 95% amino acid sequence identity to SEQ ID NO:2 and has nuclease activity and determining a functional effect of said compound by measuring nuclease activity of the MRE11 polypeptide, wherein an effect of said compound on the nuclease activity of said MRE11 polypeptide indicates that said compound modulates cellular proliferation or chemosensitivity.

9-13 (canceled)

14 (previously presented): The method of claim 8, wherein the MRE11 polypeptide is expressed in a eukaryotic host cell.

15-22 (canceled)

23 (original): The method of claim 8, wherein modulation is inhibition of cellular proliferation.

24 (original): The method of claim 8, wherein modulation is inhibition of cancer cell proliferation.

25 (original): The method of claim 8, wherein modulation is activating sensitivity to chemotherapeutic reagents.

26 (original): The method of claim 8, wherein modulation is activating sensitivity of cancer cells to chemotherapeutic reagents.

27 (original): The method of claim 14, wherein the host cell is a cancer cell.

28 (original): The method of claim 27, wherein the cancer cell is a breast, prostate, colon, or lung cancer cell.

29 (original): The method of claim 27, wherein the cancer cell is a transformed cell line.

30 (original): The method of claim 29, wherein the transformed cell line is PC3, HI299, MDA-MB-231, MCF7, A549, or HeLa.

31 (previously presented): The method of claim 27, wherein the cancer cell is a p53 null or mutant cell.

32 (previously presented): The method of claim 27, wherein the cancer cell is a p53 wild-type cell.

33 (original): The method of claim 27, wherein the cancer cell is treated with bleomycin or etoposide.

34 (original): The method of claim 8, wherein the polypeptide is recombinant.

35 (original): The method of claim 8, wherein the polypeptide is encoded by a nucleic acid having a sequence of SEQ ID NO:1.

36 (original): The method of claim 8, wherein the compound is an antibody.

37 (original): The method of claim 8, wherein the compound is an antisense molecule.

38 (original): The method of claim 8, wherein the compound is a small organic molecule.

39 (original): The method of claim 8, wherein the compound is a peptide.

40 (original): The method of claim 39, wherein the peptide is circular.

41-52 (canceled)

53 (previously presented): The method of claim 8, wherein the MRE11 polypeptide has an amino acid sequence of SEQ ID NO:2.

54 (previously presented): The method of claim 8, wherein the MRE11 polypeptide is encoded by a nucleic acid sequence having at least 95% nucleic acid sequence identity to SEQ ID NO:1.